

[illegible]

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER 5620-2
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 10/030364
INTERNATIONAL APPLICATION NO. PCT/GB00/02362	INTERNATIONAL FILING DATE 3 July 2000	PRIORITY DATE CLAIMED 2 July 1999
TITLE OF INVENTION LOAD HANDLING APPARATUS Tom McInven		
APPLICANT(S) FOR DO/EO/US		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<p>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))</p> <p>a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</p> <p>b. <input checked="" type="checkbox"/> has been communicated by the International Bureau.</p> <p>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</p> <p>6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).</p> <p>a. <input type="checkbox"/> is attached hereto.</p> <p>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</p> <p>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))</p> <p>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</p> <p>b. <input type="checkbox"/> have been communicated by the International Bureau.</p> <p>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</p> <p>d. <input checked="" type="checkbox"/> have not been made and will not be made.</p> <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).</p> <p>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (unsigned)</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p> <p>Items 11 to 20 below concern document(s) or information included:</p> <p>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. w/5 cited refs.</p> <p>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</p> <p>13. <input checked="" type="checkbox"/> A FIRST preliminary amendment.</p> <p>14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input checked="" type="checkbox"/> Other items or information: a) International Search Report b) International Publication WO 01/02281 A1 c) International Examination Report (copy)</p>		

"Express Mail" label number EL-916 999 615 US
Date of Deposit January 2, 2002
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.110 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.
Edmund E. O'Connor Signature of Depositor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Tom McNiven

Serial No.

Filed

Load Handling Apparatus

-)) Before the Examiner
-))
-))
-))
-)) Group Art Unit
-))
-))
-)) January 2, 2002

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

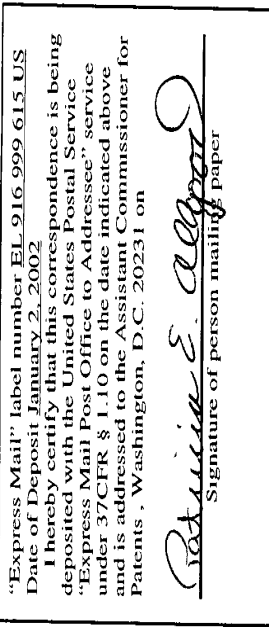
As a Preliminary Amendment to the attached Patent Application, please enter the following amendments prior to computing the required filing fees under 37 CFR 1.16.
Please charge any fees to Deposit Account No. 23-3030.

IN THE CLAIMS

Please cancel claim 10 without prejudice.

Please add claim 11 as follows:

--11. A load handling apparatus comprising at least one first elongate member having means for engaging a load and at least one second elongate member pivotally connected to said first-mentioned elongate member, and actuating means cooperating with said first and second elongate members to change the angular orientation of said first and second elongate members relative to each other;



an airbag having a number of interconnecting compartments, wherein inflation of the airbag is restrained at one edge or part thereof.--

項目	単位	数値	単位	数値
1. 総人口	人	1,234,567	2. 男性人口	612,345
3. 女性人口	人	622,222	4. 0歳人口	15,678
5. 1歳人口	人	14,567	6. 2歳人口	13,456
7. 3歳人口	人	12,345	8. 4歳人口	11,234
9. 5歳人口	人	10,123	10. 6歳人口	9,012
11. 7歳人口	人	8,901	12. 8歳人口	7,890
13. 9歳人口	人	6,789	14. 10歳人口	5,678
15. 11歳人口	人	4,567	16. 12歳人口	3,456
17. 13歳人口	人	2,345	18. 14歳人口	1,234
19. 15歳人口	人	1,123	20. 16歳人口	1,012
21. 17歳人口	人	901	22. 18歳人口	890
23. 19歳人口	人	789	24. 20歳人口	678
25. 21歳人口	人	567	26. 22歳人口	456
27. 23歳人口	人	345	28. 24歳人口	234
29. 25歳人口	人	123	30. 26歳人口	112
31. 27歳人口	人	101	32. 28歳人口	90
33. 29歳人口	人	89	34. 30歳人口	78
35. 31歳人口	人	67	36. 32歳人口	56
37. 33歳人口	人	45	38. 34歳人口	34
39. 35歳人口	人	23	40. 36歳人口	12
41. 37歳人口	人	11	42. 38歳人口	10
43. 39歳人口	人	9	44. 40歳人口	8
45. 41歳人口	人	7	46. 42歳人口	6
47. 43歳人口	人	5	48. 44歳人口	4
49. 45歳人口	人	3	50. 46歳人口	2
51. 47歳人口	人	1	52. 48歳人口	1
53. 49歳人口	人	1	54. 50歳人口	1
55. 51歳人口	人	1	56. 52歳人口	1
57. 53歳人口	人	1	58. 54歳人口	1
59. 55歳人口	人	1	60. 56歳人口	1
61. 57歳人口	人	1	62. 58歳人口	1
63. 59歳人口	人	1	64. 60歳人口	1
65. 61歳人口	人	1	66. 62歳人口	1
67. 63歳人口	人	1	68. 64歳人口	1
69. 65歳人口	人	1	70. 66歳人口	1
71. 67歳人口	人	1	72. 68歳人口	1
73. 69歳人口	人	1	74. 70歳人口	1
75. 71歳人口	人	1	76. 72歳人口	1
77. 73歳人口	人	1	78. 74歳人口	1
79. 75歳人口	人	1	80. 76歳人口	1
81. 77歳人口	人	1	82. 78歳人口	1
83. 79歳人口	人	1	84. 80歳人口	1
85. 81歳人口	人	1	86. 82歳人口	1
87. 83歳人口	人	1	88. 84歳人口	1
89. 85歳人口	人	1	90. 86歳人口	1
91. 87歳人口	人	1	92. 88歳人口	1
93. 89歳人口	人	1	94. 90歳人口	1
95. 91歳人口	人	1	96. 92歳人口	1
97. 93歳人口	人	1	98. 94歳人口	1
99. 95歳人口	人	1	100. 96歳人口	1
101. 97歳人口	人	1	102. 98歳人口	1
103. 99歳人口	人	1	104. 100歳人口	1
105. 101歳人口	人	1	106. 102歳人口	1
107. 103歳人口	人	1	108. 104歳人口	1
109. 105歳人口	人	1	110. 106歳人口	1
111. 107歳人口	人	1	112. 108歳人口	1
113. 109歳人口	人	1	114. 110歳人口	1
115. 111歳人口	人	1	116. 112歳人口	1
117. 113歳人口	人	1	118. 114歳人口	1
119. 115歳人口	人	1	120. 116歳人口	1
121. 117歳人口	人	1	122. 118歳人口	1
123. 119歳人口	人	1	124. 120歳人口	1
125. 121歳人口	人	1	126. 122歳人口	1
127. 123歳人口	人	1	128. 124歳人口	1
129. 125歳人口	人	1	130. 126歳人口	1
131. 127歳人口	人	1	132. 128歳人口	1
133. 129歳人口	人	1	134. 130歳人口	1
135. 131歳人口	人	1	136. 132歳人口	1
137. 133歳人口	人	1	138. 134歳人口	1
139. 135歳人口	人	1	140. 136歳人口	1
141. 137歳人口	人	1	142. 138歳人口	1
143. 139歳人口	人	1	144. 140歳人口	1
145. 141歳人口	人	1	146. 142歳人口	1
147. 143歳人口	人	1	148. 144歳人口	1
149. 145歳人口	人	1	150. 146歳人口	1
151. 147歳人口	人	1	152. 148歳人口	1
153. 149歳人口	人	1	154. 1	

2.

Applicant has canceled claim 10 and added new claim 11.

By John V. Moriarty
John V. Moriarty, Reg. No. 26,207
Woodard, Emhardt, Naughton, Moriarty & Associates, P.C.

**Bank One Center/Tower
111 Monument Circle, Suite 3700
Indianapolis, Indiana 46204-5137
(317) 634-3456**

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Claim 10 has been cancelled without prejudice.

Claim 11 has been added.

WO 01/02281

16 (ppts)

PCT/CB00/023621 10/030364
JC10 Rec'd PCT/PIO 02 JAN 2002LOAD HANDLING APPARATUS

The present invention relates to apparatus for handling loads, particular for lifting, positioning and/or tilting large or small and/or heavy loads.

5 According to a first aspect of the present invention, there is provided load handling apparatus comprising at least one first elongate member having means for engaging a load and at least one second elongate member pivotally connected to said first-mentioned elongate member, and actuating means cooperating with said first and second elongate members to change the angular orientation of said first and second elongate members
10 relative to each other.

The first member may engage directly with the load to be handled, or with additional elongate members disposed so as to transmit the relative movement of said first and second
15 members to the load, which is thereby manipulated as required.

In its basic embodiment, the at least one first member is about twice the length of said at least one second member, but the invention also encompasses a variant in which the two members are of equal length. This latter embodiment may be achieved by affixing to the second member an extension member which lengthens the second member to a length which is equal to the first member. Alternatively, this latter embodiment may be achieved by providing the first member as a rigid member and the second member as a broken member comprising two pivotally connected arms of equal length.

25 It is preferred that said "at least one" first and second members actually each comprise a pair of members, which will hereinafter be referred to as the first pair and the second pair respectively, each member of each pair being disposed generally parallel to the other member of the same pair and the two pairs being connected together by means of a pivot rod.

30 The actuating means may comprise a hydraulic or pneumatic mechanism, but it is preferred

WO 01/02281

PCT/GB00/02362

2

that the actuating means comprises an airbag which can be inflated by means of an airline, high pressure air bottle, battery operated compressor or the like. Alternatively, the airbag may be connected via suitable coupling means to a bolt-on air reservoir, such that the apparatus may be converted into a low profile self-levelling apparatus.

5

The airbag is conveniently disposed close to the point of pivotal connection between said first and second arms and is constructed such that inflation of the bag will cause a greater degree of inflation in the distal regions of the bag furthest away from the pivotal connection and a much lesser degree of inflation in the proximal region closest to the pivotal connection. Thus, the distal edge of the airbag inflates over an arc which is typically up to 90 degrees, such that the degree of tilt thereby imparted is up to 45 degrees.

10

Preferably, a lifting plate extends between the first pair of arms, which may also include means for connecting an attachment at an upper end thereof. Instead or in addition, a lifting table or platform may extend between the first and second pairs of arms (in the case where these are of equal length), to provide low profile vertical lifting upon inflation of the airbag.

15

However, the actuating means may alternatively be a hydraulically operated wedge device which may be driven laterally to achieve the same result.

20

According to a second aspect of the present invention there is provided an airbag having a number of interconnecting compartments, wherein inflation of the airbag is restrained at one edge or part thereof.

25

According to a third aspect of the present invention there is provided load handling apparatus comprising at least one first elongate member having means for engaging a load and at least one second elongate member pivotally connected to said first-mentioned elongate member, and an airbag cooperating with said first and second elongate members to change the angular orientation of said first and second elongate members relative to each other upon inflation/deflation of the airbag.

30

WO 01/02281

PCT/GB00/02362

3

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 illustrates one embodiment of the first aspect of the invention;

Figure 1A illustrates a variant of the embodiment of Figure 1;

Figure 2 is a plan view of the apparatus of Figure 1;

Figure 2A is a plan view of the embodiment of Figure 1A;

Figure 2B illustrates the extension member for connection to the apparatus shown in Figure 1;

Figure 3 illustrates a further embodiment of the first aspect of the invention;

Figure 4 is a plan view of the apparatus of Figure 3;

Figure 5a illustrates the use of a horizontal lifting platform;

Figure 5b illustrates a cross section along line XX' through the table part of Figure 5a;

Figure 6 is a plan view of the apparatus of Figure 5;

Figure 7 illustrates the use of multiple units of the apparatus of Figures 3 and 4;

Figure 8 illustrates the use of the unit of Figures 3 and 4 combined with the unit of Figures 1 and 2;

Figure 9 illustrates the use of the apparatus to discharge the contents of a container;

5

10

15

20

25

30

WO 01/02281

PCT/GB00/02362

5

between and attached to the upper regions of members 3 for engaging with a load, and a bottom reinforced lifting plate 2 is similarly disposed between and attached to the lower regions of members 10. The bottom edges of members 3 and 10 bear ground-engaging pairs of rollers 6 attached to the members by means of pivot pins 5. One of the roller pairs is fixed, the other slides horizontally. In Figures 1A and 2A, a platform, lifting device or order-picking device indicated schematically at 40 is fixed to the upper end of member 3.

Figure 2B illustrates an extension member 11b which is secured to end 11 of member 10 (see Figure 1) to form the embodiment shown in Figure 3.

10

In Figures 3 and 4, the second pair of members 1 are of the same length as members 3, this arrangement being suitable for the addition of a top table 8, as shown in Figure 5. Each of the upper ends of members 3 are pivotally connected to the underneath surface of top table 8 whilst the upper ends of members 1 travel horizontally on rollers 110 passing through respective channels 115 as the apparatus is operated. Also shown in Figure 5 is an inflatable airbag 9, which is a multi-compartment airbag according to the second aspect of the present invention, the airbag 9 being inflated to effect load handling. The airbag 9 is fixed to the pivot rod 7 by means of airbag holding strap 13.

15

In Figure 7, two units each comprising pairs of members 1,3 are linked together by pivot pins 5 to give greater height, the airbag 9 being disposed between the members of the lowermost unit.

20

In Figure 8, a unit comprising members 1,3 has connected on top of it, by means of pivot pins 5, a unit comprising members 3,10. The load 40 is supported between the uppermost pair of members 3, either on plate 4 or on the members themselves, and is secured against sliding off by removable stop means 18. At the base of the apparatus, rollers 6 travel within a base frame 12, the latter incorporating an anti-tilt locking device (not shown). The base frame 12 is itself mounted on wheels 42 and includes a towing bracket 15 so that the whole apparatus may readily be moved around as required.

25

30

In Figure 9, the same basic arrangement as shown in Figure 8 is illustrated, this time with an

WO 01/02281

PCT/GH00/02362

6

extended flexible chute 21 extending from the upper surface of uppermost members 3. This variant is particularly suitable for discharging the contents of a container. A removable pivoting tilt stopper 20 is attached to members 3 as shown.

5 In Figure 10, the upper end of uppermost member has connected thereto a pivoting accessory attachment holder 17 which cooperates with support bar 22 to engage an accessory 23. The accessory 23 may be, for example, the functional equivalent of the blades of a fork lift truck, or loading platform, or stand-on platform such as is provided in conventional order-picking devices. The airbag is deflated to allow the bracket 23 to be engaged beneath the load to be lifted, and then inflated to lift the load. The interconnection of members 1, 3 and 10 are such that the forces are transmitted along the apparatus in such a manner as to counterbalance the load, thus avoiding overturning. Another major advantage of the apparatus shown in Figure 10 is that the apparatus, having no permanently extended support arms, can be more readily manipulated in for example solid wall loading bays.

15 Figures 11 through 14 illustrate the method of construction of the airbag, which comprises alternate large and small sheets 1, 2 respectively joined by radio-frequency welding along lines 6, 6a, B and C. Corner reinforcements 5 serve to stabilise and strengthen the corners of the finished bag.

20 The sheets 1 and 2 have a central hole 8 therein surrounded by radio-frequency weld line 7, this hole serving to allow the air pumped into the bag from inlet 12 to rapidly fill the whole bag during inflation.

25 Large and small retaining straps 4, 4a are welded to the large sheets 1 as shown in Figure 13, along radio-frequency weld lines 3, and the airbag is bounded by small bottom sheet 9 and large top sheet 10, both without holes.

30 As can be seen in Figure 15, inflation of the bag by pumping air in through inlet 12 causes the bag to inflate as shown, with one side being restrained against inflation by means of retaining straps 4, 4a which are secured to bar 7. To deflate the bag, the air is simply let out of outlet 13 and the weight of the members or load returns the airbag to the deflated

condition.

In Figures 16 through 20, an alternative actuating means is illustrated, which comprises a hydraulic/pneumatic actuator 30. This comprises hydraulic/pneumatic cylinder 31 with a rear clevis 32 which mounts the cylinder onto the pivot rod 7. A rod 33 is extended and retracted relative to the cylinder 31, and top and bottom actuators 34, 34a respectively are pivotally mounted to the rod at hinge 35 with the free ends of actuators 34, 34a being preferably pivotally connected to members 3, 10 respectively of the handling apparatus. In the closed position as shown in Figure 18, the rod 33 is fully extended out of cylinder 31 and actuators 34, 34a lie flat against rod 33. However, upon retraction of rod 33 within cylinder 31 the actuators 34, 34a are forced, by virtue of their pivotal connection to members 3, 10 to pivot as shown in Figure 19 which represents the open position, thereby forcing members 3, 10 apart. Such an arrangement would require a hydraulic reservoir and motor, both of which would be located outside of the apparatus and are not illustrated in the drawings.

Figures 21 a to d show a further embodiment of the load handling apparatus 40 which is capable of lifting a load and tilting a load two directions. In this embodiment, the apparatus includes a top table 42 for bearing a load, with removable, drop in, load safety bars 44, 46 inserted in recesses (not shown) In this embodiment, each of the first pair of outer members 50 comprises a rigid member having a pivotally mounted roller 6 at a first and pivotally attached to the table at a second end 52. Each of the second pair of inner members 54, comprises an upper arm 56 and a lower arm 58 section of the same length and pivotally mounted on pivot rod 7. The first pair of outer members 50 are also pivotally mounted on pivot rod 7. The free end of the lower arm section 58 includes a rotatably mounted ground engaging roller or wheel 6. The free end of the upper arm section 56 includes a rotatably mounted roller or wheel 60 which runs upon and travels along an underside of the top table 42. A recessed channel (not shown) similar to that shown in Figures 5a and 5b is also provided, and through which respective rollers 60 run. The channels help to prevent the table from tipping over at larger angles. A first airbag 64 is provided between the first pair of members 50 and the upper arms 56 of the second pair of members, and is attached to the pivot rod. A second airbag 66 is provided between the first

WO 01/02281

PCT/GB00/02362

8

pair of members 50 and the lower arms 58 of the second pair of members and is attached to the pivot rod

With neither airbag inflated, as illustrated in Figure 21a, the table is in its lowest position.

5 Inflation of either airbag alone, as illustrated in Figures 21b and 21c, causes the table to tilt to either side. Inflation of both airbags by the same amount causes the table to lift vertically. Inflation of the airbags by different amounts, as illustrated in Figure 21d, causes a composite lifting and tilting motion of the table. As will be appreciated, such a table could be used to lift a load vertically, before tipping to discharge the load onto a raised

10 surface.

The apparatus includes push button controlled pneumatic circuitry to power the lifting apparatus (not shown).

15 Figures 22a & b and 23 shows a variant embodiment of the airbag aspect of the invention. The variant airbag 70 is similar to that shown in Figures 11 to 15 except for the construction of the means for fastening the air bag to the pivot rod 7. Retaining strap members 72 and 74 are attached by electronic welding at the interface 75 between a central large sheet 76 and small sheet 78. The end portion of strap 74 is attached by welding to

20 strap 72 and in use loops around the pivot rod to connect the air bag to the lifting apparatus. As shown in Figure 23, providing the air bag fastening means at the centre of the air bag helps to retain the symmetry of the airbag in use and prevents its deformation in use, thereby improving its performance.

25 In order to connect two air bags to the common pivot rod 7, as required by the embodiment shown in Figure 21, the connecting straps require modifying from those shown in Figure 11, as illustrated in Figures 24a and 24b. One suitable modification would be to provide the first airbag with connecting straps 81 configured to attach only towards the ends of the pivot rod 7 while the second airbag's connecting straps 82 are configured to connect toward the middle of the pivot rod and between the straps of the first airbag. A further

30 suitable modification would be to provide castellated respective connecting straps 83, 84 that intermesh to provide a robust connection for each airbag along the length of the pivot

WO 01/02281

PCT/GB00/02362

10

CLAIMS.

1 A load handling apparatus comprising at least one first elongate member having
means for engaging a load and at least one second elongate member pivotally connected to
5 said first-mentioned elongate member, and actuating means cooperating with said first and
second elongate members to change the angular orientation of said first and second
elongate members relative to each other.

2. An apparatus as claimed in claim 1, and including additional elongate members
disposed so as to transmit the relative movement of said first and second members to the
10 load, which is thereby manipulated as required.

3. An apparatus as claimed in claim 1, in which the at least one first member is
substantially twice the length of said at least one second member.

15

4. An apparatus as claimed in claim 1, in which the at least one first member and said
at least one second member are of substantially equal length.

5. An apparatus as claimed in claim 1, in which said at least one first and second
members, each comprise a pair of members, each member of each pair being disposed
20 generally parallel to the other member of the same pair and the two pairs being connected
together by means of a pivot rod.

6. An apparatus as claimed in claim 1, and including an actuating means comprising a
25 hydraulic or pneumatic mechanism.

7. An apparatus as claimed in claim 6, in which the actuating means comprises an
airbag.

8. An apparatus as claimed in claim 7, in which the airbag is disposed adjacent the
point of pivotal connection between said first and second members and is constructed such
30 that inflation of the bag will cause a greater degree of inflation in the distal regions of the

12-DEC-2001 15:47 FROM

WO 01/02281

PCI/CB00/02362

11

bag, furthest away from the pivotal connection and a much lesser degree of inflation in the proximal region closest to the pivotal connection.

9. An airbag having a number of interconnecting compartments, wherein inflation of
5 the airbag is restrained at one edge or part thereof.

10. A load handling apparatus as claimed in claim 1 and including an airbag as claimed
in claim 9

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
11 January 2001 (11.01.2001)

PCT

(10) International Publication Number
WO 01/02281 A1

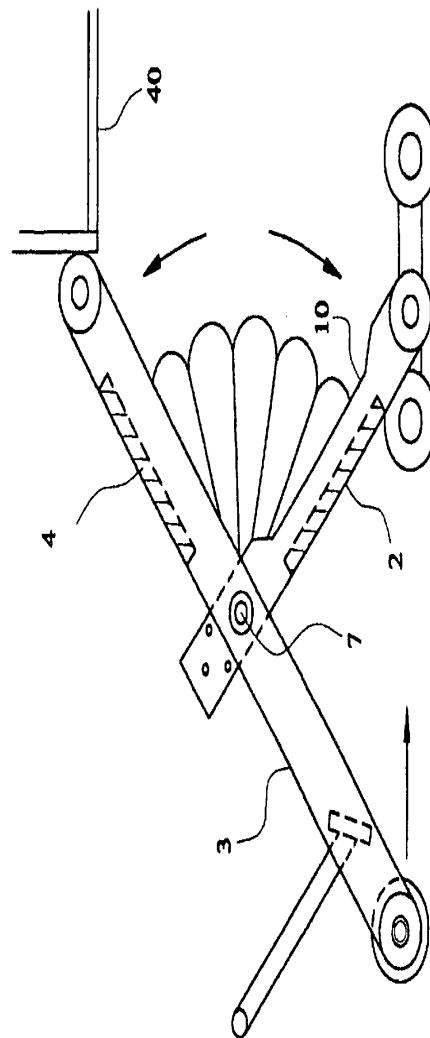
- (51) International Patent Classification: B66F 7/08 (81)
(21) International Application Number: PCT/GB00/02362
(22) International Filing Date: 3 July 2000 (03.07.2000)
(25) Filing Language: English
(26) Publication Language: English
(30) Priority Data: 2 July 1999 (02.07.1999) GB 9915384.3
(71) Applicant and
(72) Inventor: MCNIVEN, Tom [GB/GB]; Unit 3, Spence Mills, Mill Lane, Bramley, Leeds LS12 3HE (GB).
(74) Agent: ORR, William, Melean; Urquhart-Dykes & Lord, Tower House, Merriem Way, Leeds LS2 8PA (GB).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guide-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: LOAD HANDLING APPARATUS



(57) Abstract: The load handling apparatus comprises at least one first elongate member (3) having means for engaging a load and at least one second elongate member (10) pivotally connected to said first-mentioned elongate member. An airbag (9) cooperating with said first and second elongate members changes the angular orientation of said first and second elongate members relative to each other upon inflation/deflation of the airbag.



WO 01/02281 A1

-1/18-

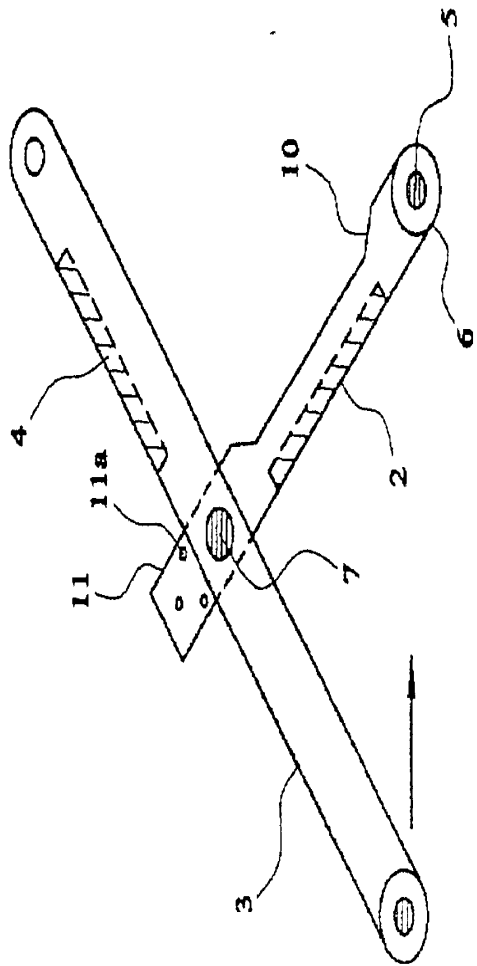


FIG. 1

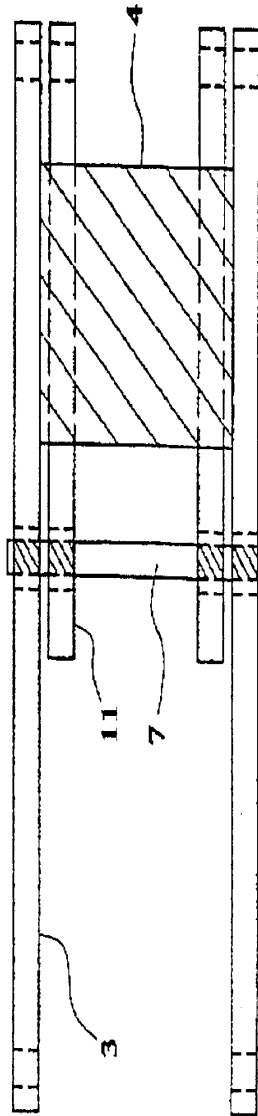


FIG. 2

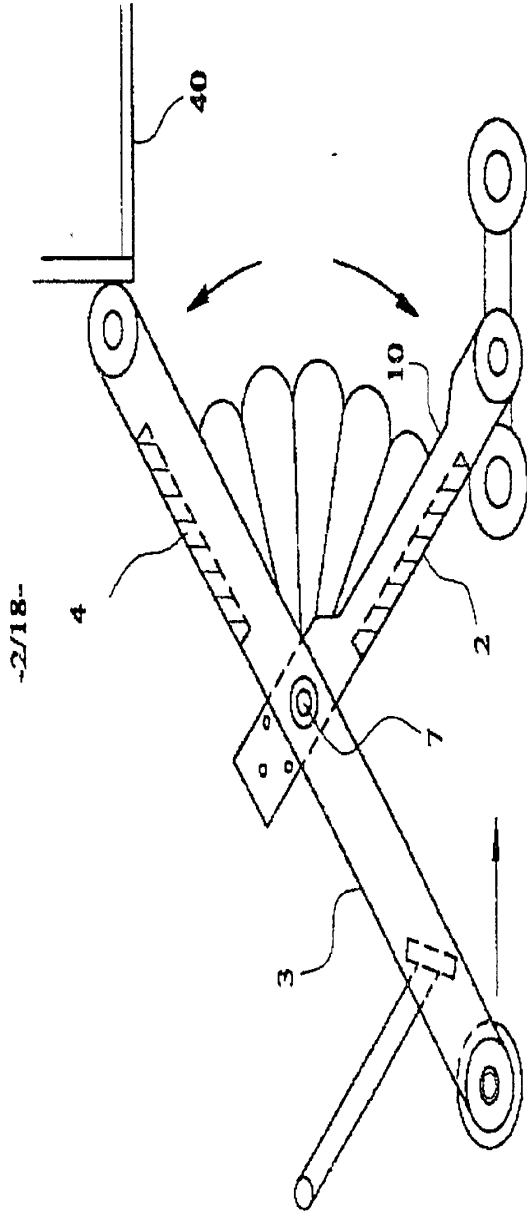


FIG. 1A

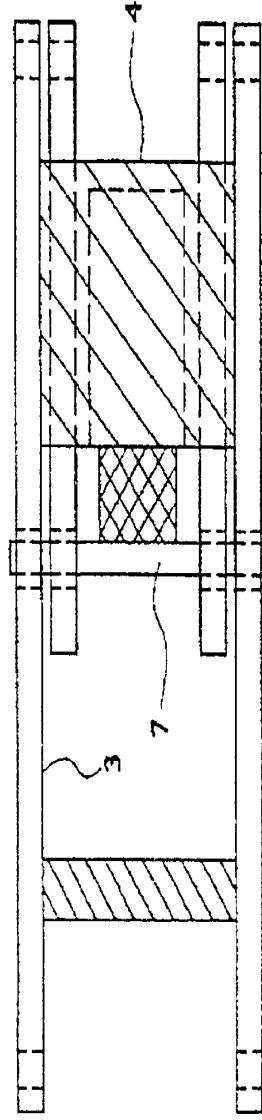


FIG. 2A

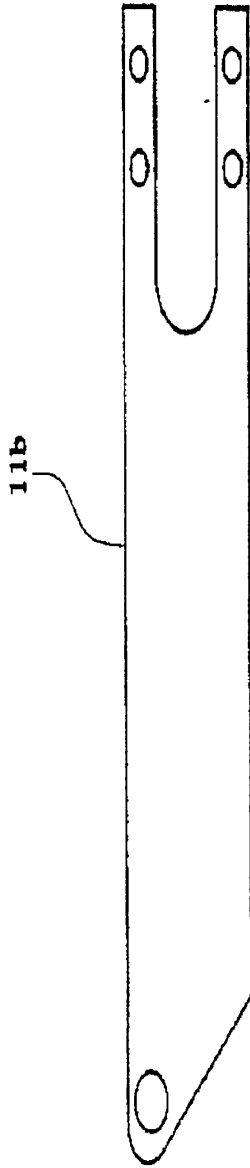


FIG. 2B

-4/18-

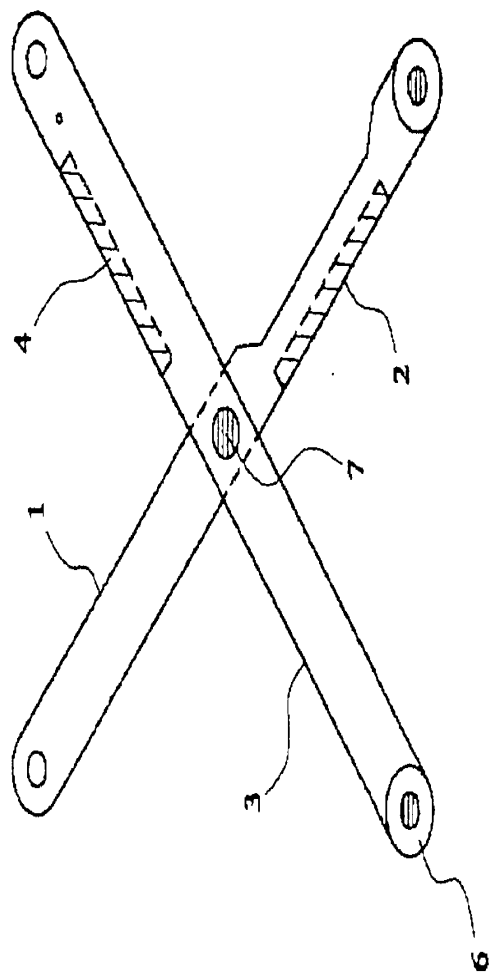


FIG. 3

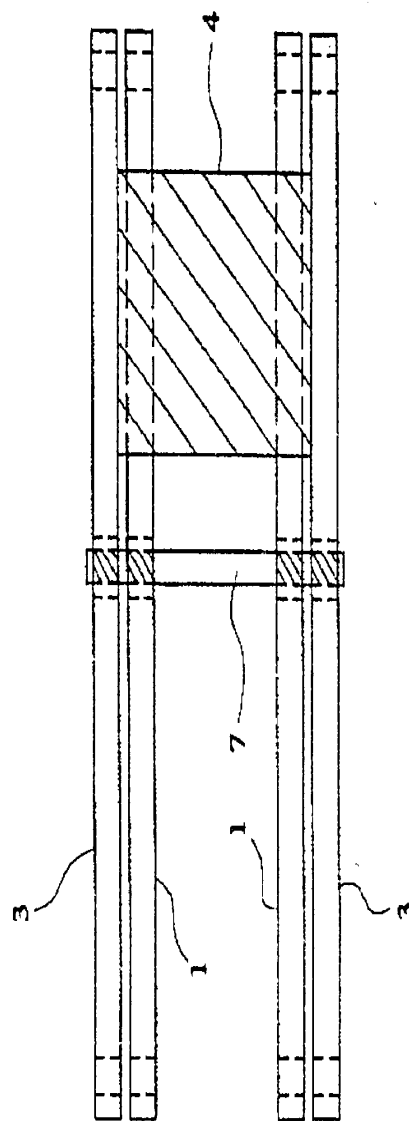


FIG. 4

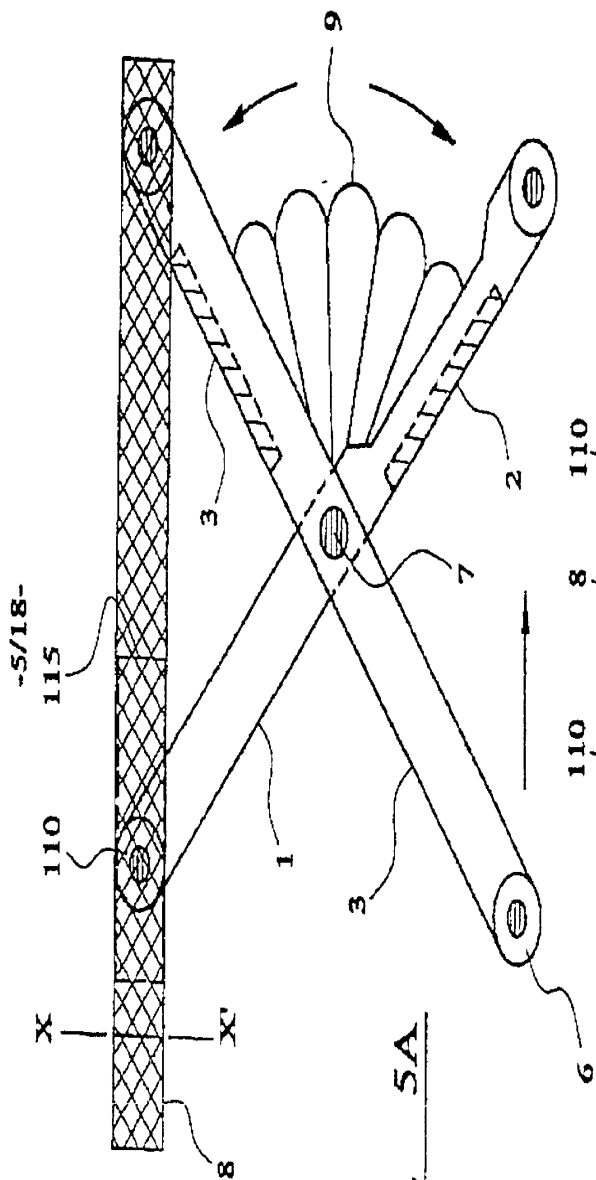


FIG. 5A

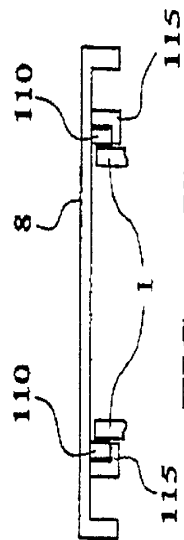


FIG. 5B

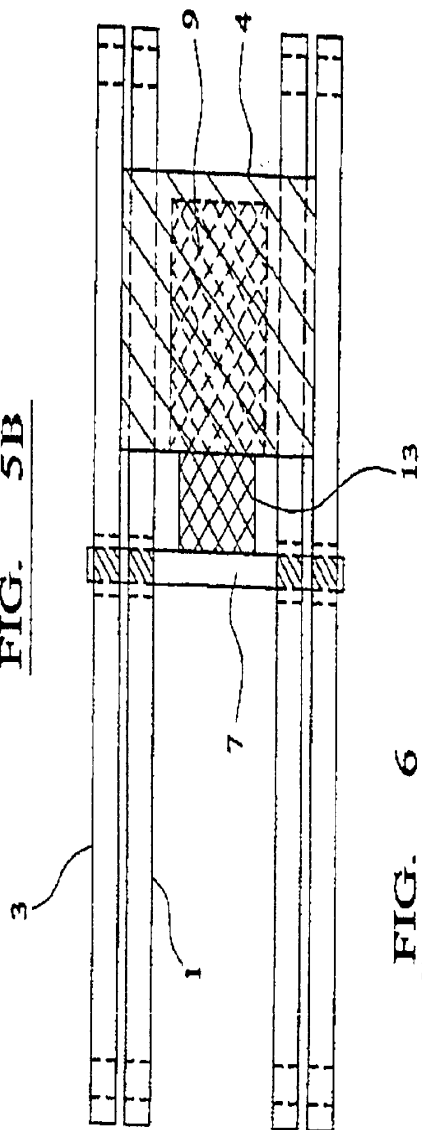


FIG. 6

-6/18-

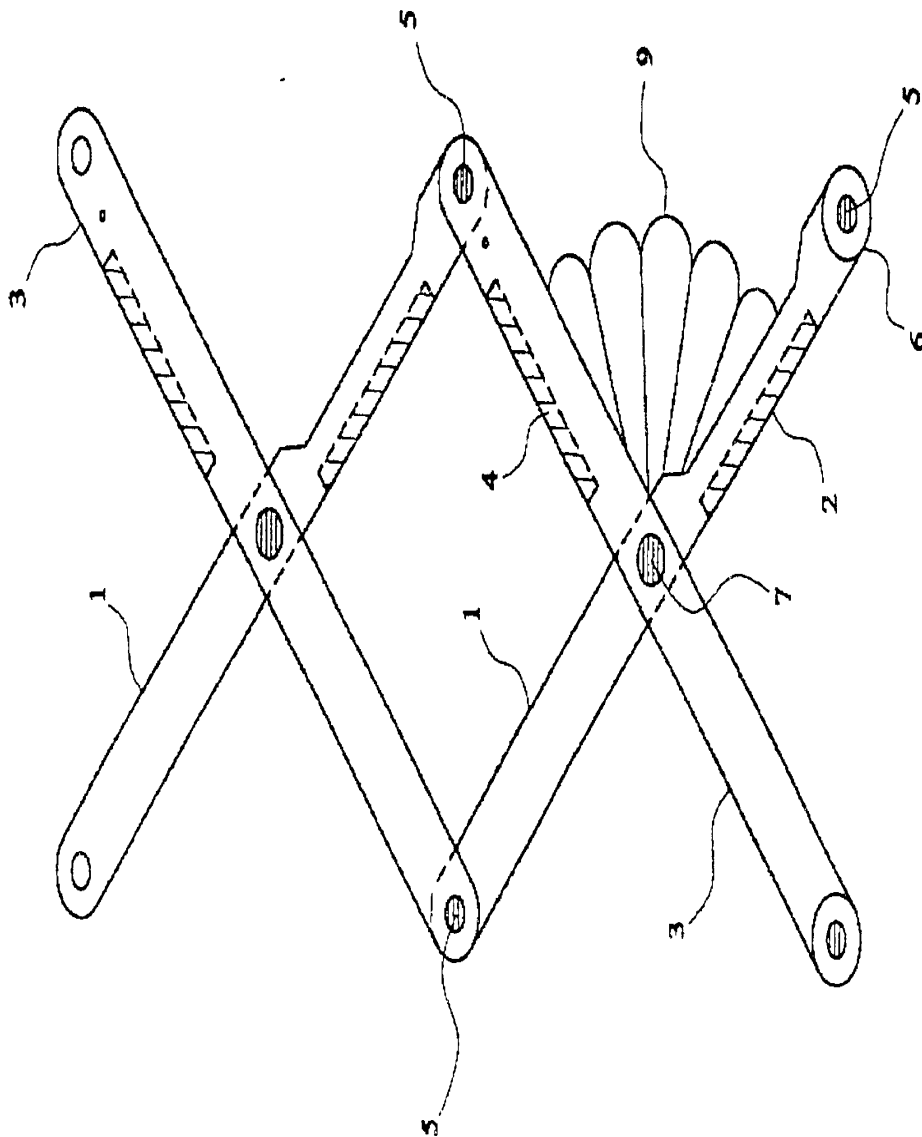


FIG. 7

-7/18-

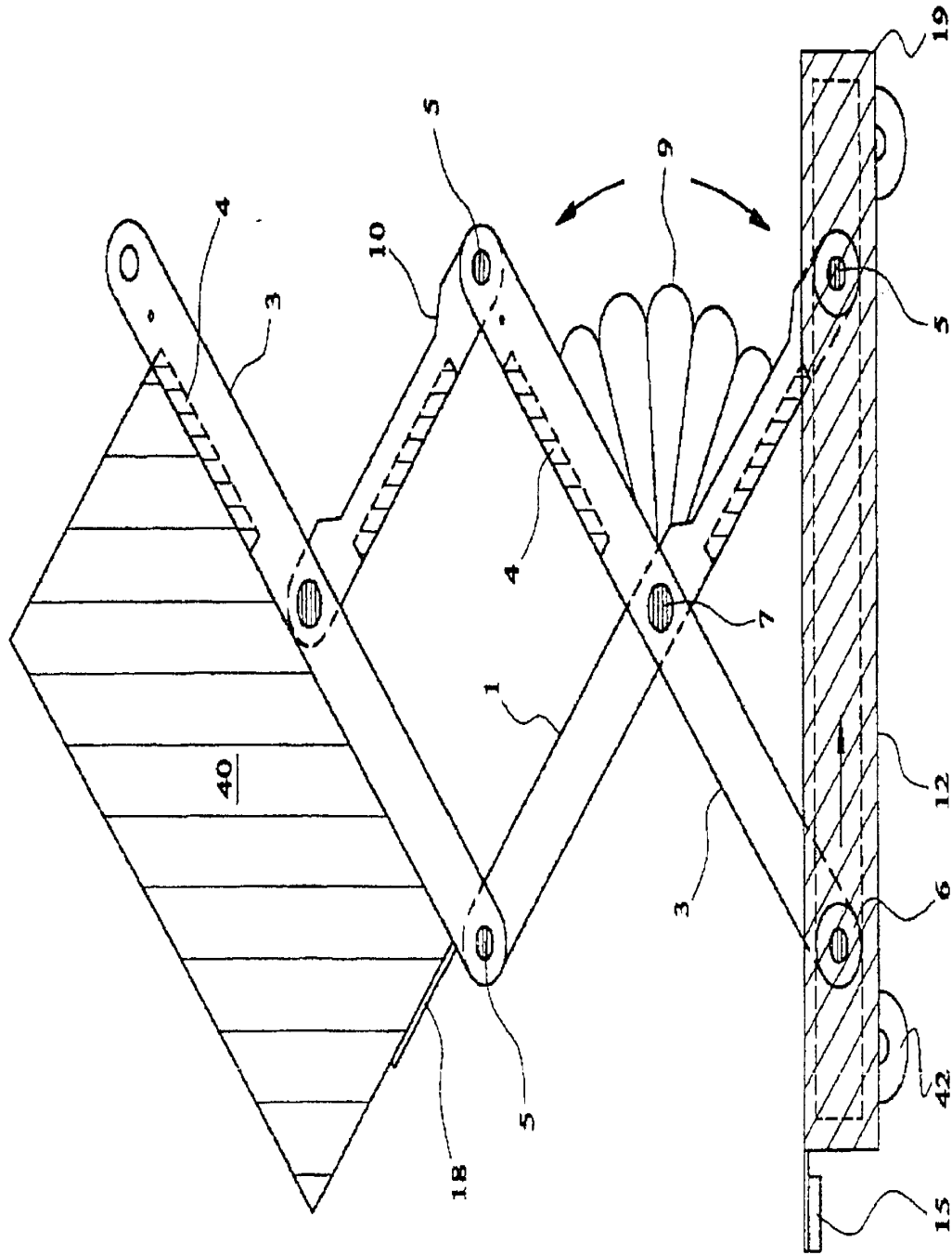


FIG. 8

-8/18-

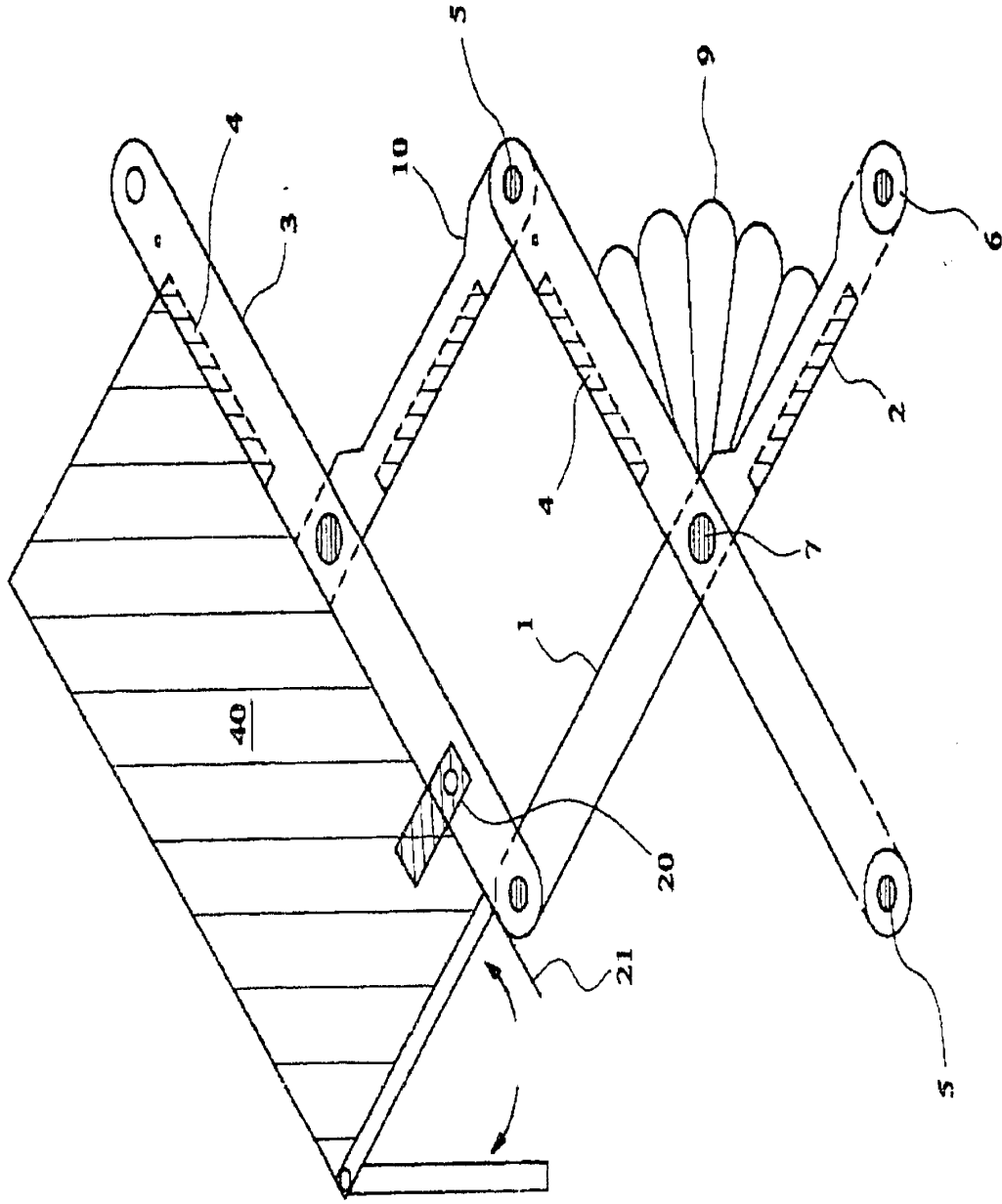


FIG. 9

-9/18-

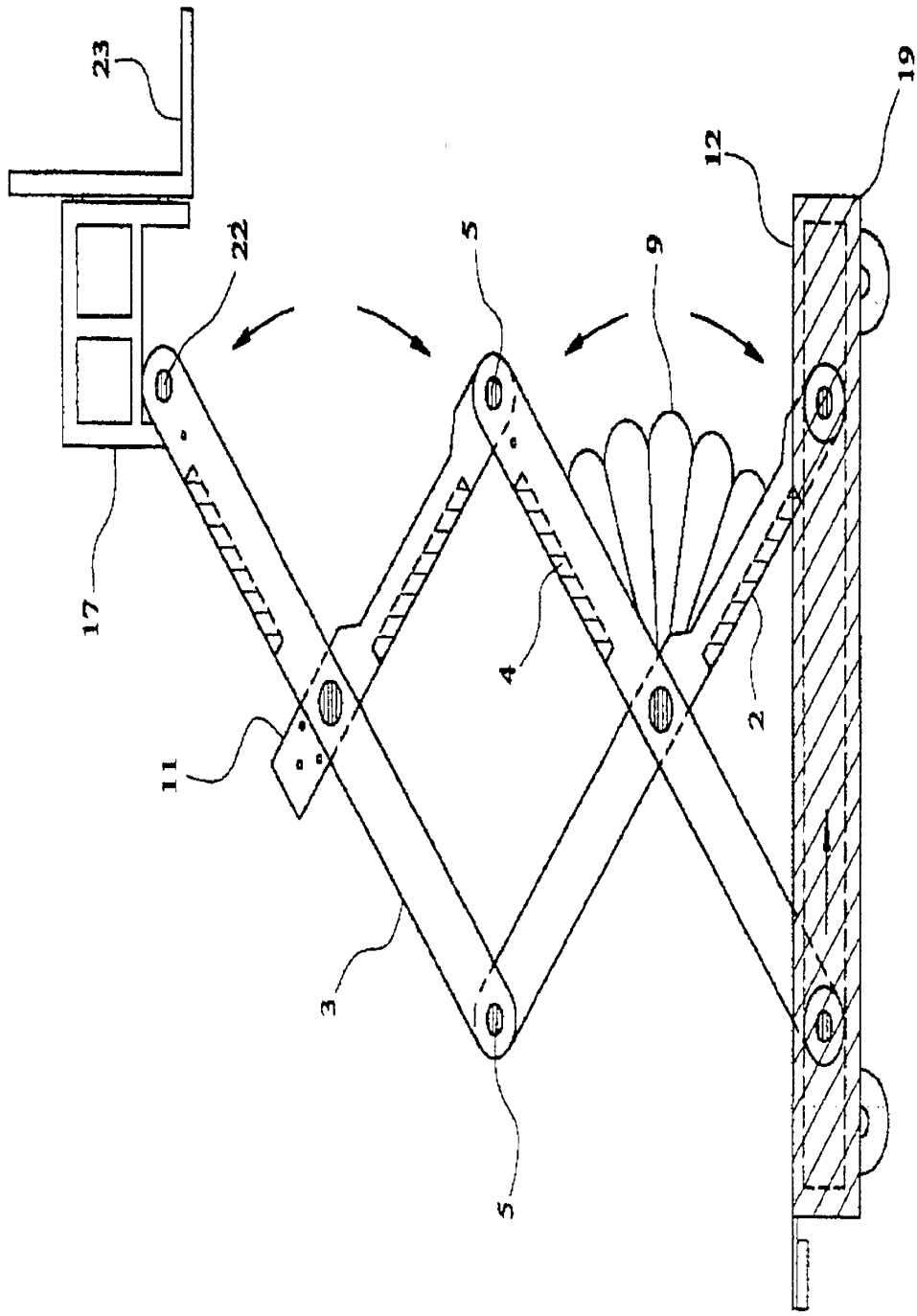


FIG. 10

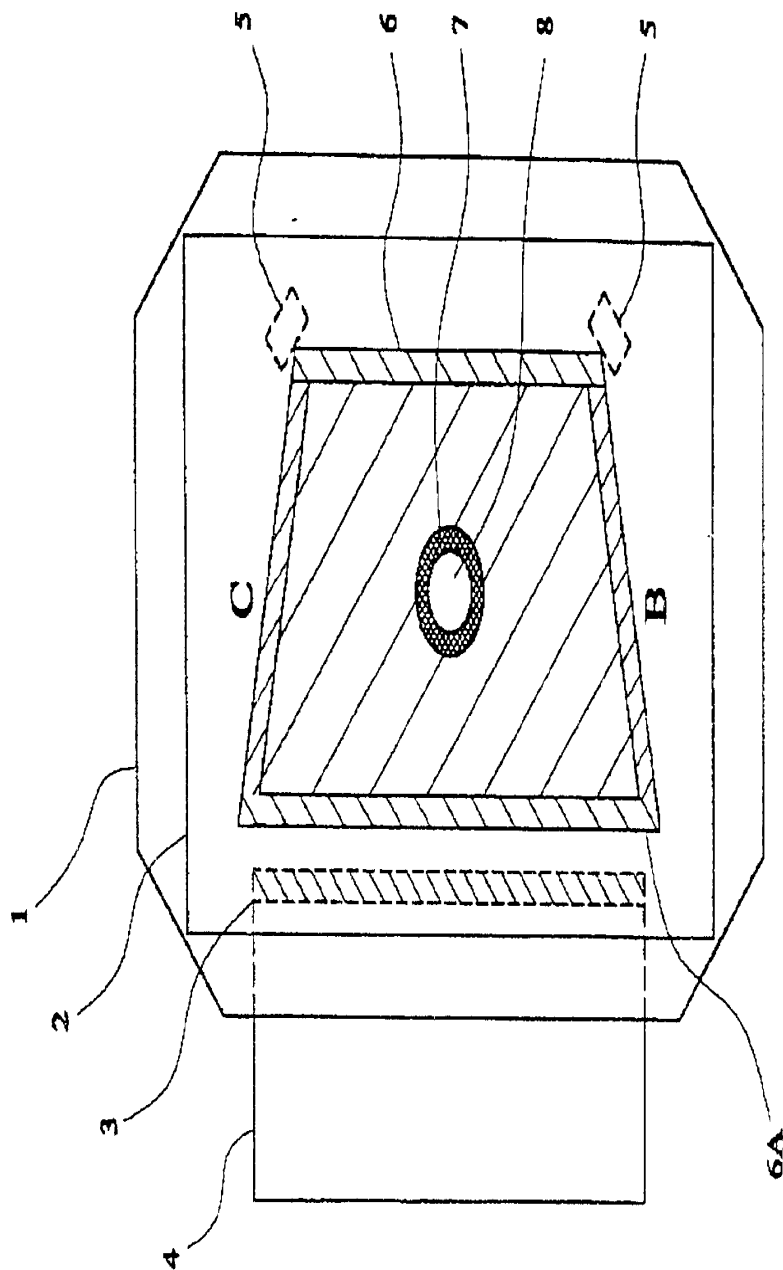


FIG. 11

-11/18-

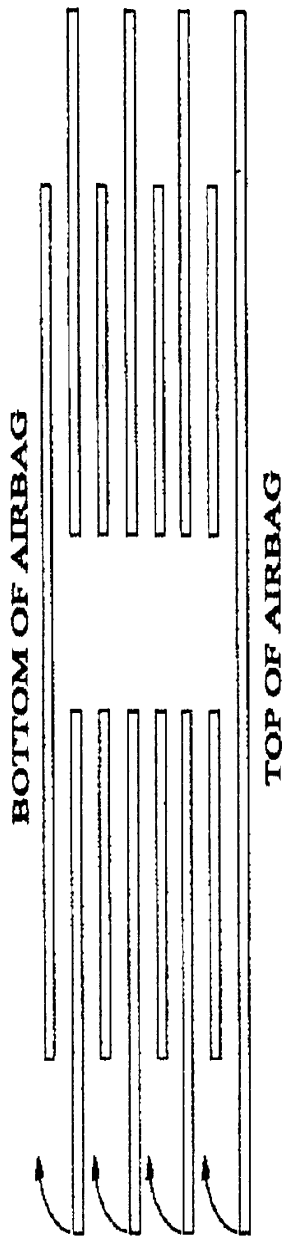


FIG. 12

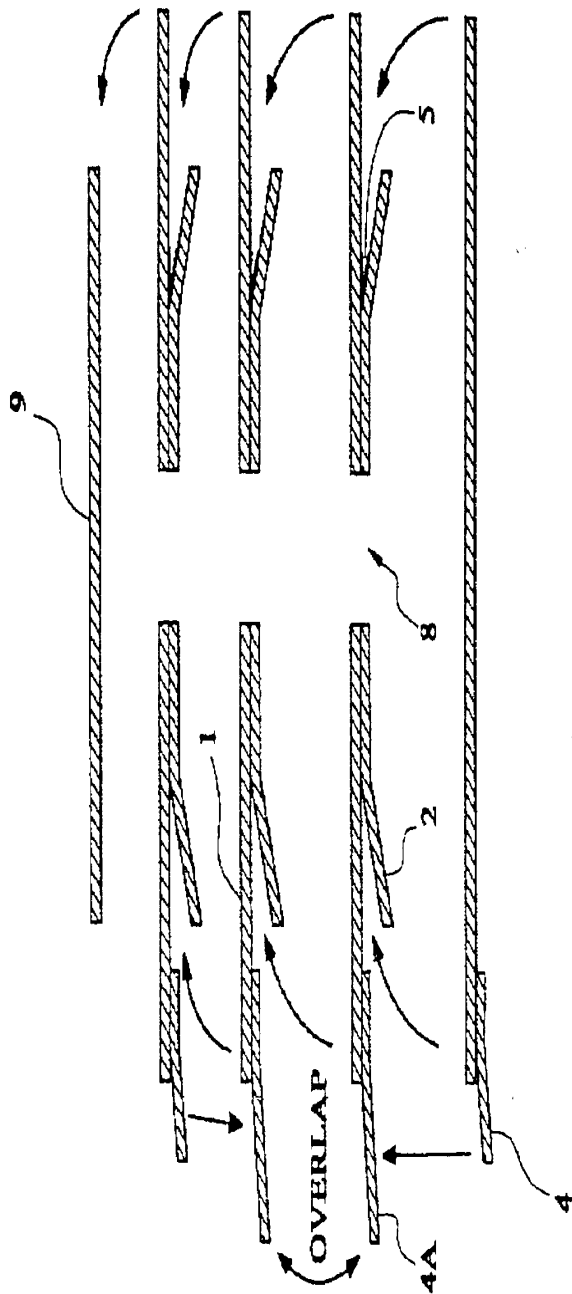


FIG. 13

-12/18-

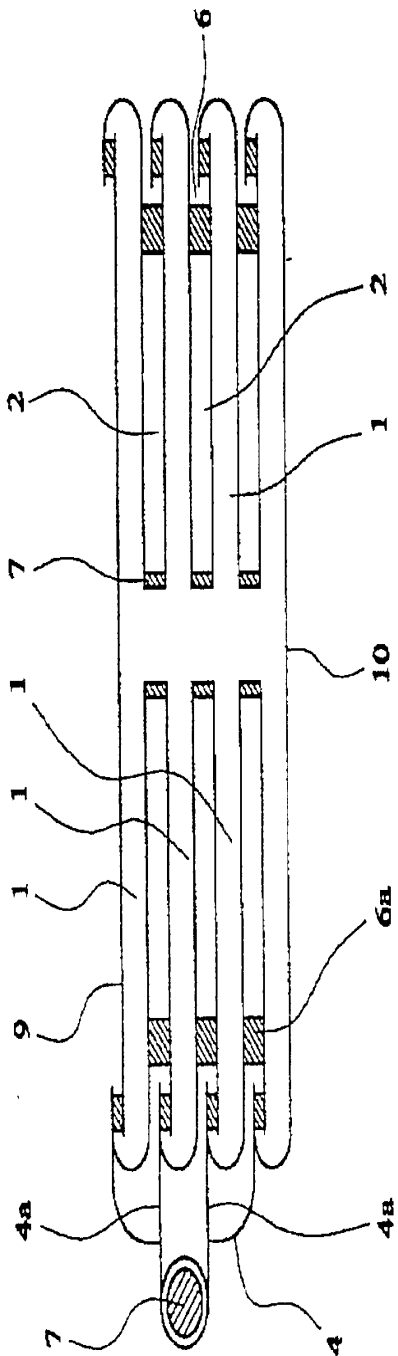


FIG. 14

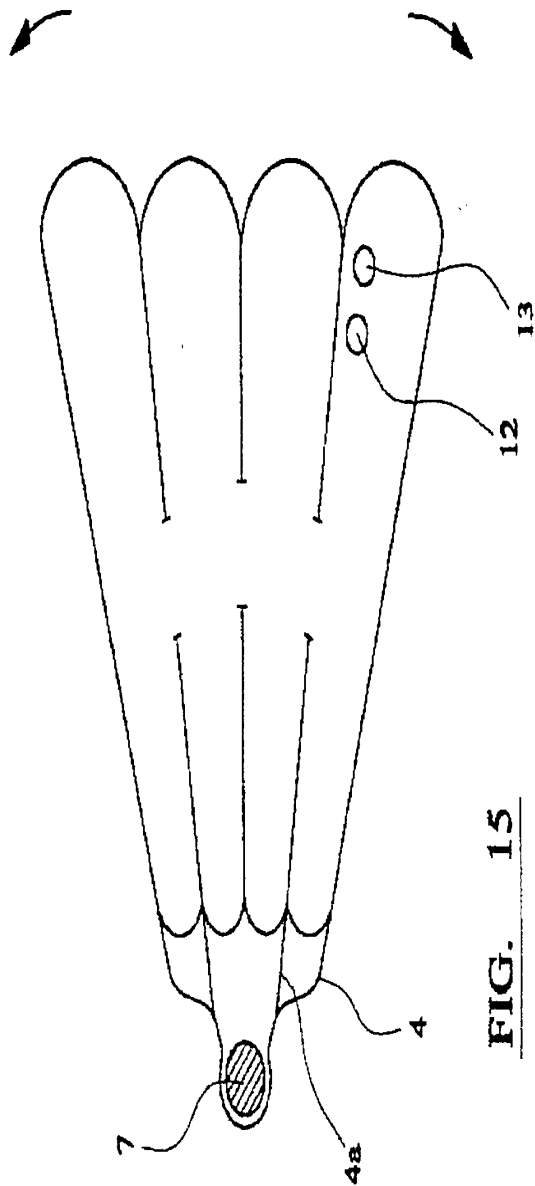


FIG. 15

-13/18-

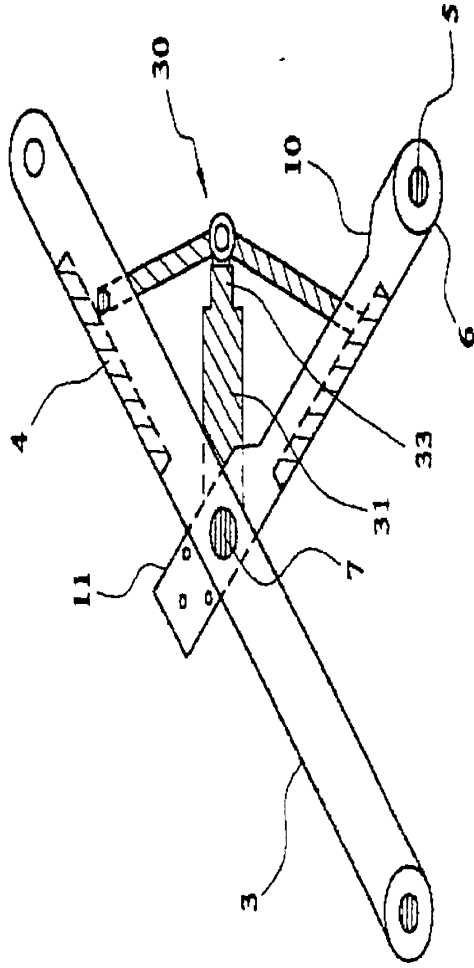


FIG. 16

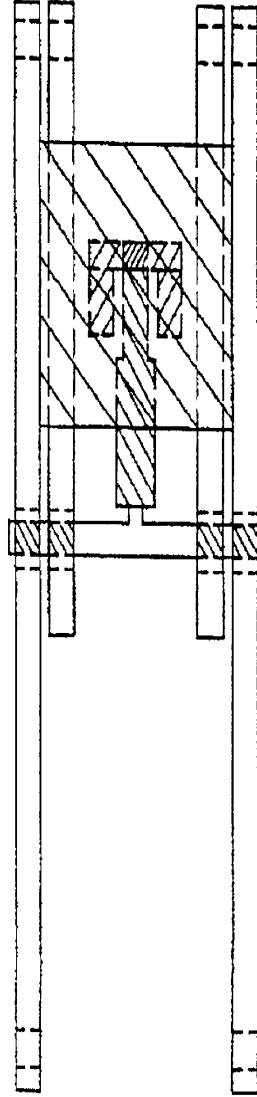


FIG. 17

-14/18-

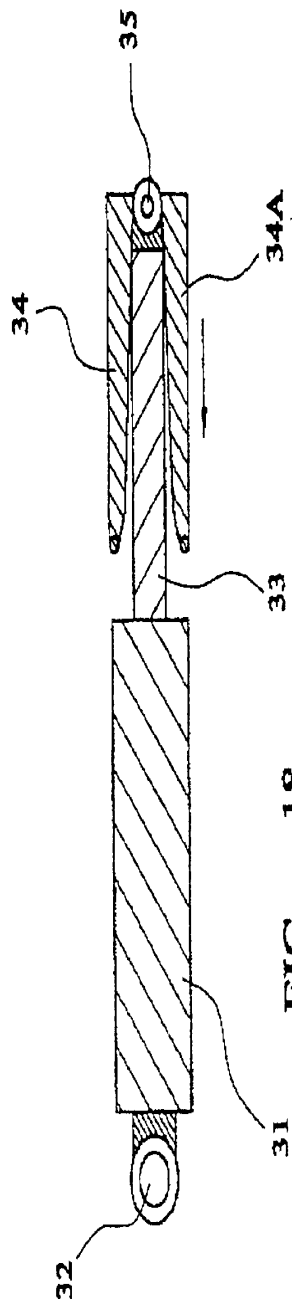


FIG. 18

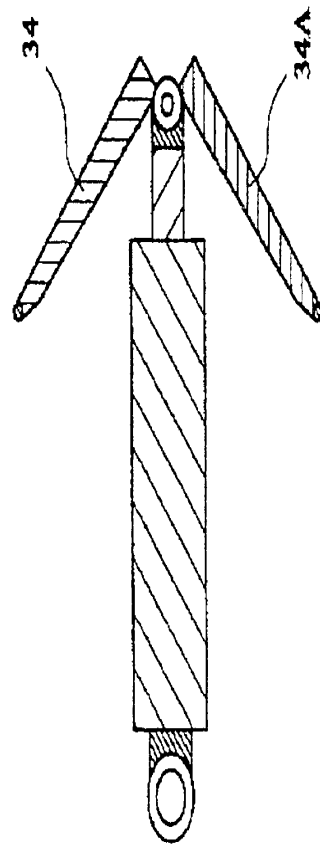


FIG. 19

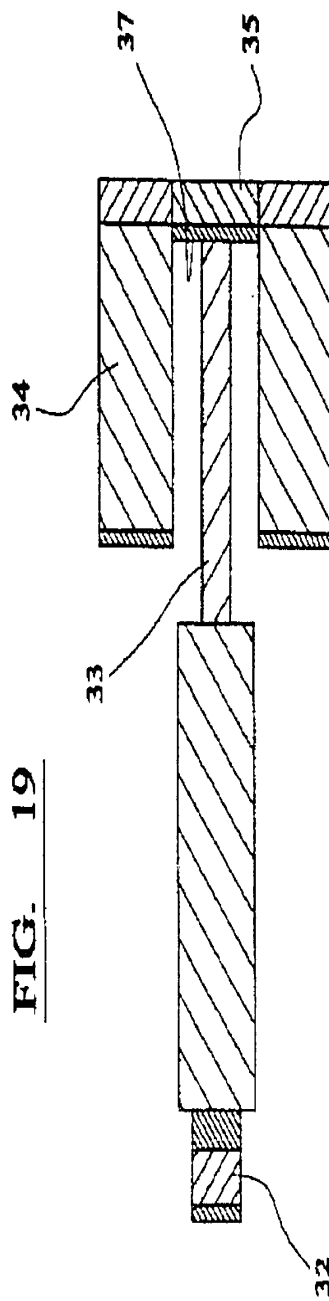


FIG. 20

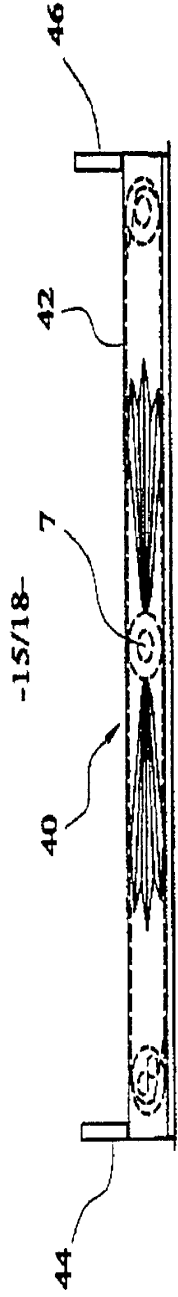


FIG. 21a

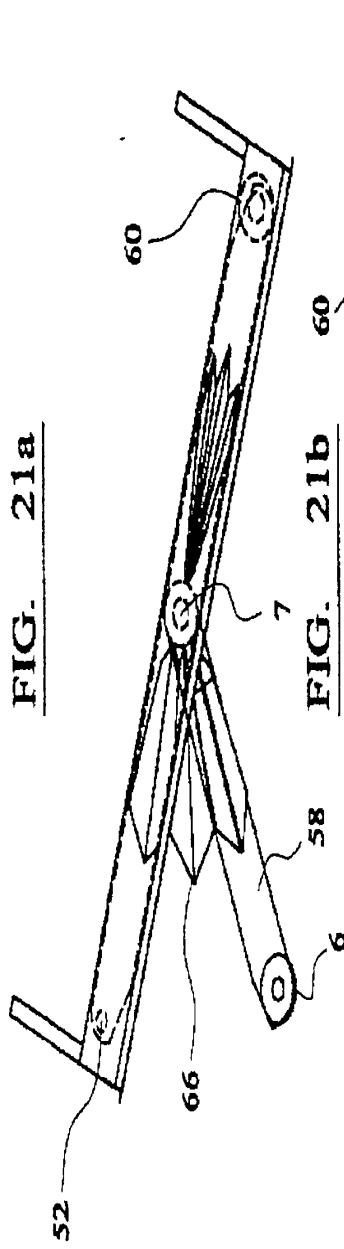


FIG. 21b

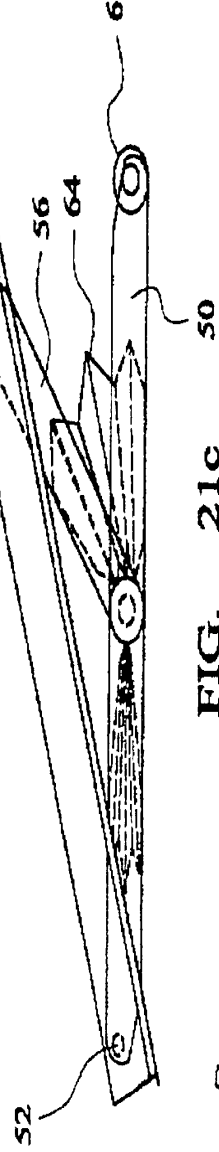


FIG. 21c

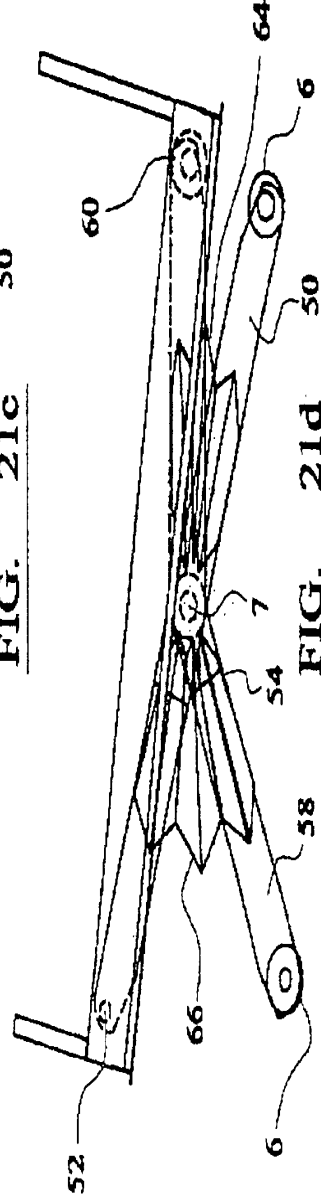


FIG. 21d

U.S. APPLICATION NO. 10/030364		INTERNATIONAL APPLICATION NO. PCT/GB00/02362		ATTORNEY'S DOCKET NUMBER 5620-2													
<p>21. <input checked="" type="checkbox"/> The following fees are submitted:</p> <p>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</p> <p>Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and international search report not prepared by the EPO or JPO. \$1040.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search report prepared by the EPO or JPO. \$890.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO. \$740.00</p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4). \$710.00</p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4). \$1000.00</p> <p>ENTER APPROPRIATE BASIC FEE AMOUNT = <input type="checkbox"/> 20 <input type="checkbox"/> 30</p> <p>Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(c)).</p>				<p>DOCUMENT PROCESSING BRANCH</p> <p>02 JAN 10 AM 9 19</p>													
<p>CLAIMS</p> <table border="1"> <thead> <tr> <th>NUMBER FILED</th> <th>NUMBER EXTRA</th> <th>RATE</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>0</td> <td>x \$18.00</td> </tr> <tr> <td>3</td> <td>0</td> <td>x \$84.00</td> </tr> <tr> <td colspan="2"></td> <td>+ \$280.00</td> </tr> </tbody> </table> <p>Independent claims</p> <p>TOTAL OF ABOVE CALCULATIONS = \$890.00</p> <p>MULTIPLE DEPENDENT CLAIM(S) (if applicable)</p> <p>Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.</p> <p>SUBTOTAL = \$445.00</p> <p>Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).</p> <p>TOTAL NATIONAL FEE = \$</p> <p>Fee for recording the enclosed assignment (37 CFR 1.21(b)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +</p> <p>TOTAL FEES ENCLOSED = \$445.00</p> <p>Amount to be refunded: \$</p> <p>charged: \$</p>				NUMBER FILED	NUMBER EXTRA	RATE	10	0	x \$18.00	3	0	x \$84.00			+ \$280.00	<p>CALCULATIONS PTO USE ONLY</p>	
NUMBER FILED	NUMBER EXTRA	RATE															
10	0	x \$18.00															
3	0	x \$84.00															
		+ \$280.00															

a. ☒ A check in the amount of \$ 445 in the amount of \$ to cover the above fees.

b. ☐ Please charge my Deposit Account No.

c. ☐ A duplicate copy of this sheet is enclosed.

d. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 23-3030. A duplicate copy of this sheet is enclosed.

e. ☐ Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

John V. Moriarty

WOODARD EMHARDT NAUGHTON MORIARTY & MCNETT

111 Monument Circle, Suite 3700

Indianapolis, IN 46207-5137

SIGNATURE John V. Moriarty

NAME John V. Moriarty

26, 207

REGISTRATION NUMBER

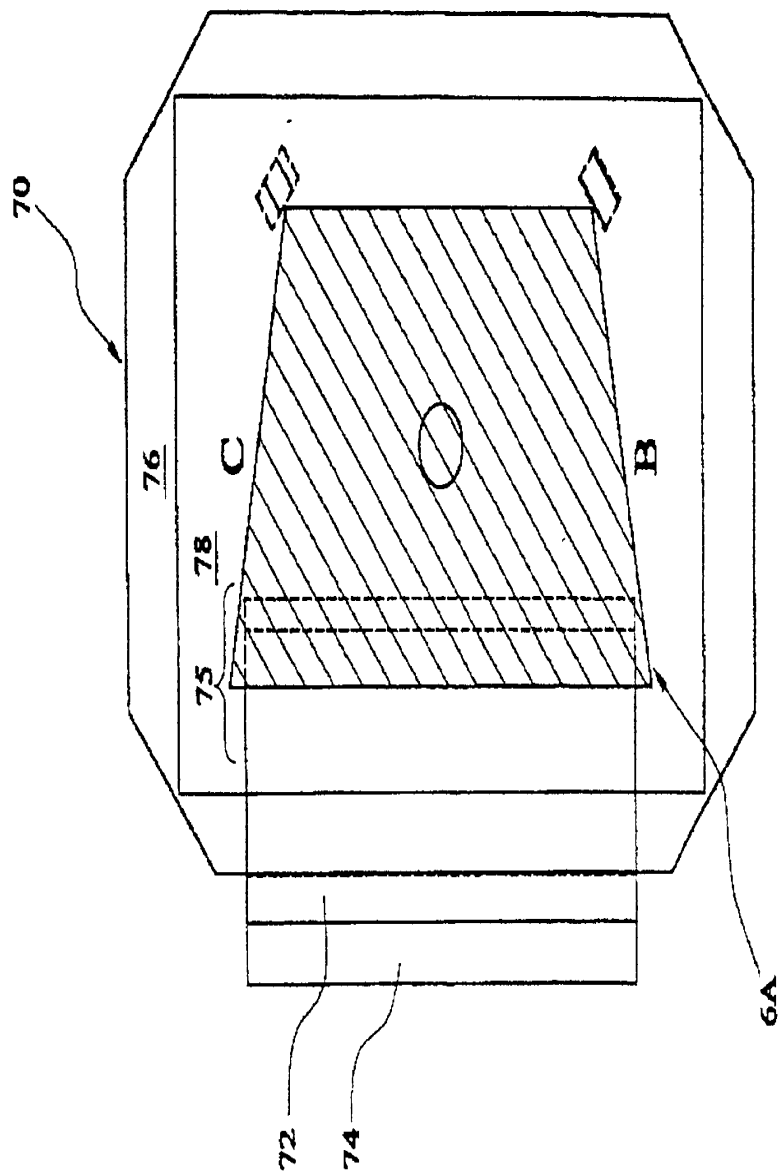
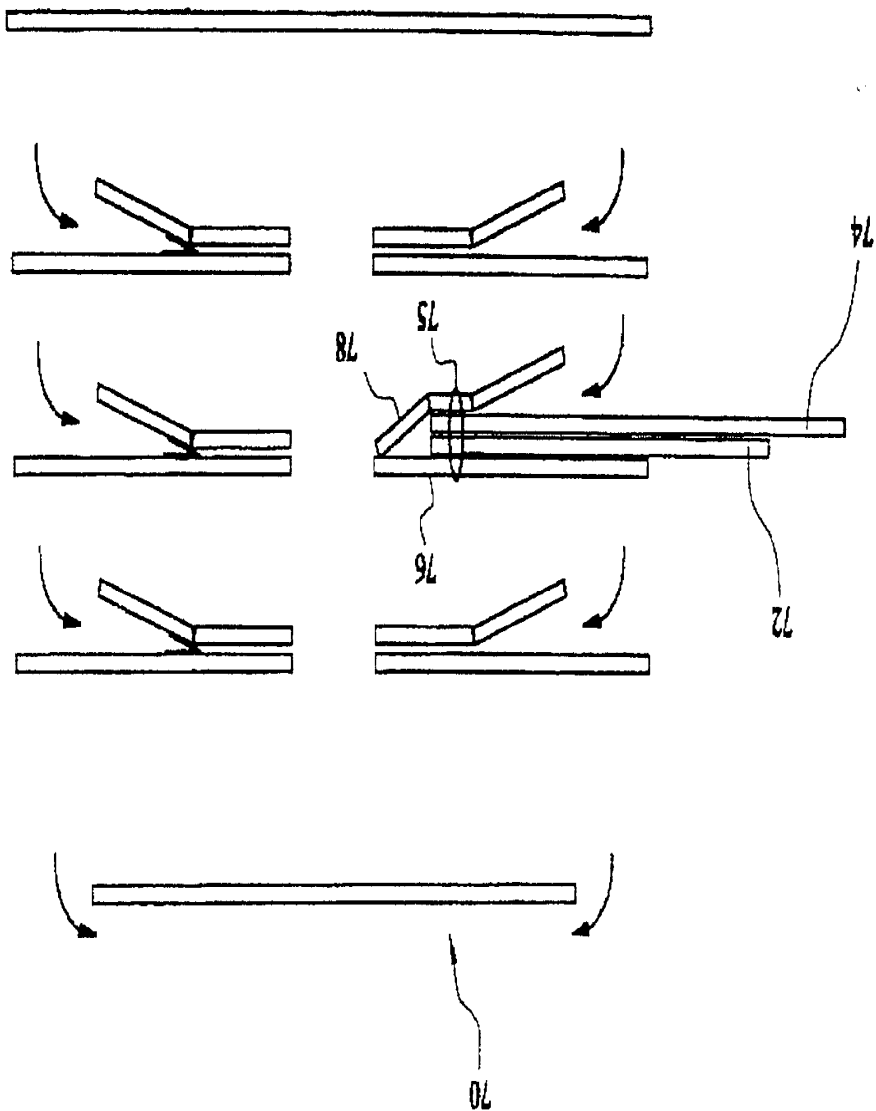
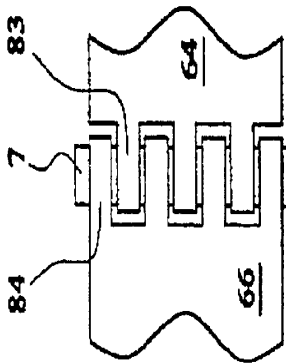
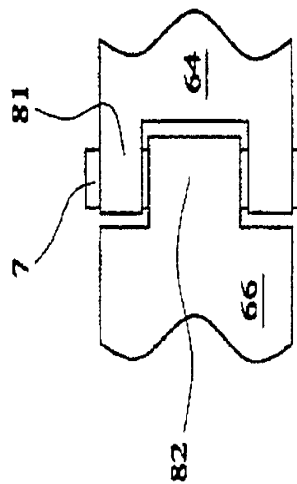
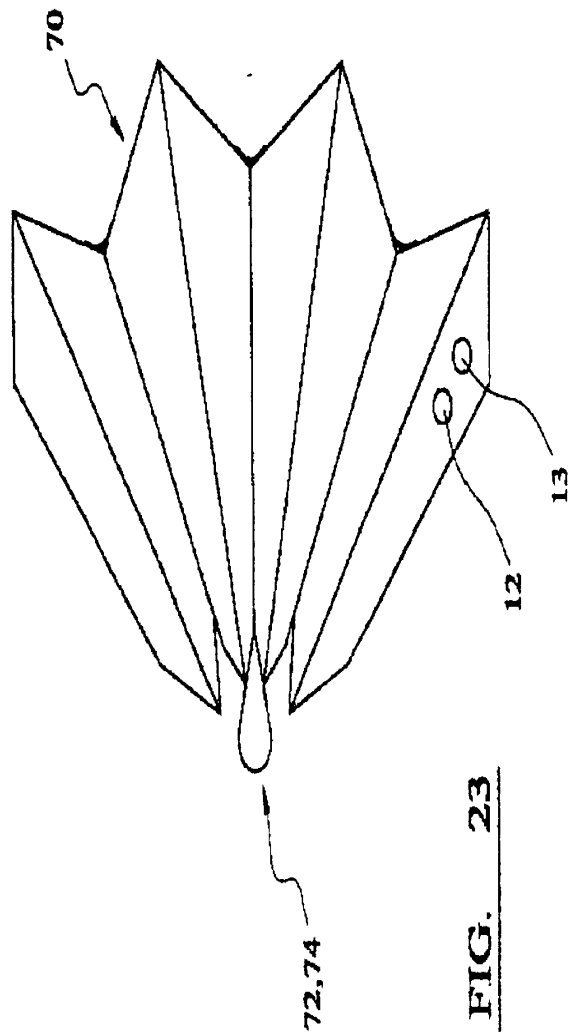


FIG. 22a

FIG. 22b



-18/18-



Type a Plus sign (+) inside this box →

105-1-JVM:152701

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted With Initial Filing
OR
☒ Declaration Submitted after Initial Filing (surcharge 37 CFR 1.16 (e) required)

Attorney Docket Number	5620-2
First Named Inventor	Tom McNiven
Application Number	COMPLETE IF KNOWN 10/030,364
Filing Date	January 2, 2002
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

LOAD HANDLING APPARATUS

(Title of the Invention)

the specification of which

☐ is attached hereto OR ☒ was filed on (MM/DD/YYYY) 01/02/2002 as United States Application Number 10/030,364 and was amended on (MM/DD/YYYY) (if applicable).
I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim, as amended by any amendment specifically referred to above.

I acknowledge and hereby disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Check Only if Priority Not Claimed	Certified Copy Attached?
GB00/02362 9915384.3	PCT GB	07/03/2000 07/02/1999	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:
I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Filing Date (MM/DD/YYYY)

☐ Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

Type a plus sign (+) inside this box → ☐

WENMM SB/01 pg 2

DECLARATION — Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below, and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Number**Parent Filing Date (MM/DD/YYYY)****Parent Patent Number (if applicable)**

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto. As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

☐ Customer Number

OR

☒ Registered practitioner(s) name/registration number listed below.

Place Customer Number Bar Code Label Here

SEE ATTACHED SHEET

Name

Registration Number

Registration Number

☒ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

Direct all correspondence to:

☐ Customer Number Bar Code Label

OR

☒ Correspondence address below

Name John V. Moriarty

Address

Woodard, Emhardt, Naughton, Moriarty & McNett

Address

111 Monument Circle, Suite 3700

City Indianapolis

Country US

Telephone

(317) 634-3456

State IN

ZIP

46204

Fax

(317) 637-7525

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:

☐ A petition has been filed for this unsigned inventor.

Given Name (first and middle (if any))

Family Name or Surname

McNiven

Inventor's Signature

Residence: City

Leeds

Post Office Address

55 Elder Road

Post Office Address

Leeds

City

Leeds

State

ZIP

Country

UK

17 me Moriarty

State GBX

Country UK

Date

14 JAN 2002

Citizenship

British

☐ Additional inventors are being named on the supplemental Additional inventor(s) sheet(s) PTO/SB/02A attached hereto.

Type a Plus sign (+) inside this box →

+

WENMM SB/02C (4/01)

DECLARATION

Registered Practitioner Information
(Supplemental Sheet)

Name	Registration Number	Name	Registration Number
Harold R. Woodard	16,214		
C. David Emhardt	18,483		
Joseph A. Naughton, Jr.	19,814		
John V. Moriarty	26,207		
John C. McNett	25,533		
Thomas G. Henry	28,309		
James M. Durlacher	28,840		
Charles R. Reeves	28,750		
Vincent O. Wagner	29,596		
Steve Zlatos	30,123		
Spiro Bereveskos	30,821		
Clifford W. Browning	32,201		
R. Randall Frisk	32,221		
Daniel J. Lueders	32,581		
Kenneth A. Gandy	33,386		
Timothy N. Thomas	35,714		
Kurt N. Jones	37,996		
John H. Allie	39,088		
Holiday W. Banta	40,311		
Troy J. Cole	35,102		
L. Scott Paynter	39,797		
Charles J. Meyer	41,996		
Matthew R. Schantz	40,800		
Gregory B. Coy	40,967		
Lisa A. Hiday	40,036		
John V. Daniluck	40,581		
Christopher A. Brown	41,642		
C. John Brannon	44,557		
Arthur J. Usher IV	41,359		
Douglas A. Collier	43,556		
Brad A. Scheepers	45,431		
Scott J. Stevens	29,446		
James B. Myers	42,021		
John M. Bradshaw	46,573		
Charles P. Schmal	45,082		
Edward E. Sowers	36,015		
Quentin G. Cantrell	47,469		